

HIGH-SPEED DIGITAL PRINTER... SERIES 1200

FEATURES

- **HIGH SPEED** — Continuous operation at 20 lines per second.
- **RELIABILITY** — Unique and simple design assures permanent freedom from wear and breakdown. Only drive motor requires lubrication — once per year.
- **PRINTS QUICKLY** — At 20 lines per second, 16 characters print in 17 milliseconds leaving 33 milliseconds printer idle time for acquisition of new data.
- **TRANSISTORIZED** — Completely solid-state electronic circuitry.
- **VERSATILE** — One to 12 columns. Accepts either 8421, 4221, or 2421 binary and BCD code input.
- **CONVENIENT** — Prints 10 decimal digits, plus six other symbols.
- **SIMPLE** — Only 2 moving parts per column. Magnetic paper shift mechanism has only 2 moving parts. All-electric ribbon reverse has 2 moving parts.
- **ZERO SUPPRESSION** — Insignificant zeroes suppressed optionally in any column.
- **WARRANTY** — 50 million lines or one year.



TYPICAL SERIES 1200 DIGITAL PRINTER

GENERAL DESCRIPTION

The Franklin Series 1200 High-Speed Printers are intended for use in printing out decimal data, and certain symbols. They operate at a standard speed of 20 lines per second or 1200 lines per minute. The number of columns furnished may vary from 1 to 12, depending on individual requirements.

The printers are designed to operate from computers, digital voltmeters, scanners, digital clocks, decade scalars, frequency counters, and other devices having a digital output.

AVAILABLE CHARACTERS

If 8421 binary input code is used, characters available are the 10 decimal digits, minus sign, AC sign, ohms sign, plus sign, decimal point, and asterisk. If 4221 or 2421 BCD input code is used, characters available are the 10 decimal digits, minus sign, and asterisk.

AVAILABLE CODES

8421, 4221, 2421 binary and BCD input codes can be accepted by the Series 1200 printers. However, the codes cannot be mixed, since code selection is made by indexing the print drum on its shaft. Changing of codes is a simple adjustment which can be performed at any time by inexperienced personnel.

PAPER AND RIBBON

The Model R1200 printer uses standard 2¼" wide roll or folded paper. Inking is provided by the customary silk inked ribbon which continuously traverses the printing area.

The ribbon reversing mechanism is of extreme simplicity. The ribbon arbor shafts are directly driven by permanently lubricated clutch-head motors. Two switches and a relay control the direction of motion.

OPERATING PRINCIPLES

All characters for each column are engraved on the outside surface of a print drum which rotates at a constant speed. A paper tape and an inked ribbon are interposed between the print drum and a set of hammers; one hammer for each column. Operation of the hammers results in the desired characters being printed on the paper tape.

During the print operation, the print drum continues to rotate. However, because of the mass energy relationships involved, the hammers are in contact for such a brief instant that printing is accomplished without blurring.

The location of any character on the moving drum surface at any time is precisely established by a code wheel in conjunction with a magnetic pickup. Precision machining of this part permits high accuracy in the placement of the characters on the paper tape and prevents vertical misalignment of characters.

CONSTRUCTION

The electronic circuitry, which is all solid-state, is on printed circuit boards. These boards are color-coded and keyed. All boards are accessible from the top of the chassis. Space is provided for one spare of every kind of board used. When desired, a set of spares is furnished at a very moderate additional cost. Only two spares are required.

The transistorized power supply is also a separate package which fits into the top of the printer on the left side.

The printer mechanism is mounted on roller slides so that it can be pulled forward from the front panel for convenience in loading paper or changing ribbon. The mechanism slides forward a full ten inches and changing a ribbon or loading paper is accomplished simply and quickly. For example, to replace the ribbon, it is not necessary to thread it through the printer mechanism. The ribbon, which is supplied mounted on two spools, is easily slipped under the print drum while the spools are just as easily slipped on their shafts.

SPECIFICATIONS . . . SERIES 1200 DIGITAL PRINTERS

SPEED

20 lines per second. (For speeds to 40 LPS, see Series 1000 printers.)

PRINT CYCLE

Print cycle is 50 milliseconds; 17 milliseconds print time, 33 milliseconds idle time on standard unit. Data to be printed must be held in parallel at input for duration of 17 milliseconds print time.

Type 6B standard print drum characters are as follows:

8421 Code: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, —, ~, Ω, +, ., *,

4221 and 2421 Code: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, —, *,

INPUT LOGIC

Binary input only — 4-wire, column parallel. The Model 1200 will accept any of three binary input codes: 8421, 4221, or 2421. Voltage levels are as follows:

VOLTAGE LEVELS

Condition	Standard	Optional Extra		
"0"	0 V	+6 V	0 V	—6 V
"1"	—6 V	0 V	+6 V	0 V

Input impedance for all BCD inputs above is 15K ohms. Maximum input voltage positive is +15 volts; negative is —30 volts.

ZERO SUPPRESSION

Available as an optional extra in any column.

PRINTER INPUT CONTROL SIGNALS

1. External Inhibit — This line can be used to inhibit the printer from an external source. Input impedance 15K, minimum level for inhibit —6 volts.
2. External Print Once — Printer prints once when this line is shorted to circuit ground.
3. Negative Print Command — Commands print on leading edge of negative pulse. Maximum rise time 1 microsecond; minimum width 20 microseconds; minimum amplitude 12 volts.
4. Positive Print Command — Command print on leading edge of positive pulse. Maximum rise time 1 microsecond; minimum width 20 microseconds; minimum amplitude 12 volts.
5. Enable Signal — This line can be used to delay the output gate signals from the printer by applying a negative voltage (—6 volts min.). Use, for example, is for a control signal from a scanner to delay a digital voltmeter "read" (output gate) command from the printer.

ZERO SUPPRESSION

Zero suppression is easily accomplished in any column. This feature refers to the ability of the printer to detect and suppress insignificant zeros. That is, any zero not having a significant digit somewhere to its left will not print. The position is left blank. The number +00704 with zero suppression will print + 704.

TYPICAL PRINT CYCLE

The printer provides signals for commanding scanners to scan, digital voltmeters to read, etc. An inhibit line is available to prevent printing while data is being collected. These features are explained in detail under the specifications which follow.

The print cycle begins with an "end of print" pulse from the printer. This pulse signals the data acquisition device to acquire data for printout. After the data has been acquired, the data source gives the printer a print command. The printer then prints out the data. During the time required for the actual operation of the hammers, an inhibit signal is available to prevent changes in input data. At the completion of the printout another "end of print" pulse starts a new cycle. (See specifications.)

PRINTER OUTPUT CONTROL SIGNALS

1. Negative gate output during actual printout, when input data must be held in parallel at print input. Output is normally 0 volts; goes to —12 volts during printout, and back to 0 volts when printing has been completed (after 17 milliseconds).
2. Positive gate output during actual printout. Output is normally —12 volts; goes to 0 volts during printout, and back to —12 volts when printing has been completed (after 17 milliseconds).

CIRCUIT GROUND

Circuit ground is completely isolated from chassis ground and can be floated from chassis ground by ±150 volts.

POWER REQUIREMENTS

1. 105-125 volts 60 cycles, 4 amperes maximum.
2. 190-250 volts 60 cycles, 2 amperes maximum.
(50 cycles available as an optional extra.)

PRINT FORMAT

10 characters per inch across paper, 6 lines of print per inch vertical spacing.

PAPER STOCK

2¼" wide roll or folded paper. (Specify which.)

FRONT PANEL CONTROLS

1. ON-off switch and pilot light.
2. PAPER OUT warning light.
3. Paper release lever.
4. OPERATE-INHIBIT control switch.
5. PRINT ONCE control switch.
6. PAPER ADVANCE control switch.
7. STANDBY-PRINT CONTINUOUS control switch.

WARRANTY

50 million lines or one year, whichever occurs first.

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